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PCT/KR2003/000132

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 23 MAY 2005

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Applicant's or agent's file reference OPP021175KR	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/KR2003/000132</b>	International filing date (day/month/year) <b>22 JANUARY 2003 (22.01.2003)</b>	Priority date (day/month/year) 27 DECEMBER 2002 (27.12.2002)
International Patent Classification (IPC) or national classification and IPC <b>IPC7 H04N 7/24</b>		
Applicant <b>ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE et al</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of \_\_\_\_\_ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand <b>27 JULY 2004 (27.07.2004)</b>	Date of completion of this report 04 MAY 2005 (04.05.2005)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer KIM, Kyeoun Soo Telephone No. 82-42-481-8174 

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR2003/000132

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☐ the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement) under Article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the drawings:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item:

- These elements were available or furnished to this Authority in the following language English which is
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☒ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION

International application No.

PCT/KR2003/000132

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1-48	YES
	Claims	None	NO
Inventive step (IS)	Claims	1-48	YES
	Claims	None	NO
Industrial applicability (IA)	Claims	1-48	YES
	Claims	None	NO

### 2. Citations and explanations (Rule 70.7)

Reference is made to the following documents from the International Search Report (ISR):

D1: US 5619256 A

D2: US 6313866 B1

D3: Mi-Hyun Kim, et al., "Edge-preserving directional regularization technique for disparity estimation of stereoscopic images", International Conference on Consumer Electronics, pp. 376-377, 22-24 June 1999

Claims 1-48 meet the criteria set out in PCT Article 32(2)-(3), because the prior art under the documents D1-D3 does not teach or fairly suggest the apparatus and the method for encoding and decoding stereoscopic video, characterized by maintaining compatibility with existing MPEG-4 encoding techniques and systems and minimizing complexity of synchronization between the right and left images. The present invention selectively controls the quality of images and encodes the images according to importance or complexity of the images, thereby improves encoding efficiencies.

D1 relates to an efficient digital compression of 3D/stereoscopic video, characterized by utilizing disparity estimate and motion compensated estimate, and combining these two estimates for prediction, that is, one for providing an average between these two estimates, the other for allowing choice between various combinations resulting from weightings applied to the estimates. Such a technique represents a significant improvement over known techniques in achieving high efficiency compression of 3D/stereoscopic video, and is fully compatible with existing video compression standards (MPEG-2 etc.).

D2 relates to a 3-dimensional image display apparatus, characterized by comprising a depth information maximum value acquisition circuit acquiring depth information contained in a first image signal, and a parallax control circuit controlling the parallax amount of a second image signal on the basis of depth information contained in the first and second image signal.

D3 relates to a disparity estimation of stereoscopic images and its expansion to the stereoscopic video system, characterized in that only one viewpoint sequence is encoded at the basic encoder, a non-scalable MPEG-2 video encoder and the rest of the viewpoint sequences are encoded at the temporal auxiliary encoder.

The documents D1-D3 disclose 3D/stereoscopic video encoding/decoding techniques using disparity estimate, and especially the document D1 presents combined prediction of disparity estimate and motion estimate, the document D2 contains auxiliary image extraction circuit and 3D image synthesizer, and the document D3 describes the disparity map coding.

While D1 and D3 claim the compatibility with existing video coding standards, the present invention claims a pixel-based horizontal disparity map, quantized horizontal disparity map allocated to an auxiliary component of a disparity type of the MPEG-4 MAC (multiple auxiliary component), and the compatibility with existing MPEG-4 video coding standard.

Claims 1-48 meet the criteria of PCT Article 33(4), because the invention can be used to a method and apparatus for encoding and decoding stereoscopic video.